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## Call Notes of the Bush-Tit

BY JOSEPH GRINNELL

(Read before the A. O. U.—Cooper Club Convention, May 16, 1903)

DURING three-fourths of the year the California bush-tits forage about in flocks. These bands may consist of as many as thirty individuals, but generally there are from fifteen to twenty. Although we call them flocks, they are not such in the sense that blackbirds or linnets form flocks; for the bush-tits never bunch together and mount high in air to take a prolonged flight. But they form a loitering company, scattered among several scrub oaks or brush-clumps. There may be a general onward movement, for if a person locates himself in the midst of the restless drove, in a few minutes they will have almost all gone off in some particular direction. A few stragglers sometimes forget themselves, and suddenly feeling lost, fly helter-skelter after the main company with excited calls. Evidently there are some, perhaps two or three adults, who take the initiative, and involuntarily direct the movements of the younger or more timid individuals which follow along after. During such slowly moving excursions, each individual is rapidly gleaning through the foliage, assuming all possible attitudes in its search for tiny insects among leaves and twigs. The attention of each is on himself as a usual thing, but each is continually uttering a faint but characteristic simple location-note, a note of all's-well which indicates safety and also the whereabouts of the main body to stragglers, and each individual to any other.

At times, especially towards evening, the flocks become more restless and move along from bush to bush and tree to tree much more rapidly than when feeding, the birds straggling hurriedly after each other in irregular succession. During these hurried cross-country excursions, the simple location-notes are pronounced louder and are interlarded at frequent intervals with a shrill quavering note. The faster the band travels, the louder and more oft-repeated becomes these all-import-

ant location-notes; for the greater becomes the danger of individuals becoming separated from the main flock. Bush-tits are usually hidden from each other in dense foliage. They have no directive color-marks; therefore, being gregarious birds, the great value of their location-notes becomes apparent.

Should a bush-tit lag so far behind as to be beyond hearing of his fellows, he may suddenly come to a realization of his loneliness; he at once becomes greatly perturbed, flitting to the tallest available perch, and uttering the last mentioned note reinforced into a regular cry for his companions. This is usually heard by the distant band and several similar answering cries inform the laggard of the direction the flock has taken. Off he goes in zigzag precipitation and joins his fellows with evident relief. We may judge from the strongly gregarious habit of the bush-tits that each individual gains from the community life. Such mites of birds surely have enemies, and a clue as to the identity of one enemy, at least, was brought to my attention last summer at Pacific Grove. There I took from the nest a young sharp-shinned hawk, the stomach of which contained an adult bush-tit, in pieces of course. Those of us who have closely observed the bush-tits to any extent will certainly recall the following experience at one time or another. I myself have witnessed it scores of times. A flock of bush-tits will be foraging as usual, with the ordinary uncertain medley of location-notes, when suddenly one or two birds utter several of the sharp alarm notes and then begin a shrill quavering piping. This is taken up by the whole flock, until there is a continuous monotonous chorus. At the same time every member of the scattered company strikes a stationary attitude in just the position it was when the alarm was first sounded, and this attitude is maintained until the danger is past. In nearly every case the danger is in the shape of a hawk, more especially of the smaller species such as the sharp-shinned or sparrow hawks. No matter how close the hawk approaches, the shrill chorus continues and even intensifies until the enemy has passed. The remarkable thing about this united cry, is that it is absolutely impossible to locate any single one of the birds by it. The chorus forms an indefinitely confusing, all-pervading sound, which I know from personal experience to be most elusive. It may be compared in this respect to the sound of the cicada. This confusion-chorus, as I think it might be appropriately called, is a sure sign of the appearance of a small hawk even a long way off. Often long before I could myself locate the hawk, a neighboring band of bush-tits would have set up their cry, thus announcing its approach. It seems reasonable to infer that this monotonous chorus of uncertain direction, at the same time as it sounds a general alarm, serves to conceal the individual birds, all of which at the same time maintain a statuesque, motionless attitude. Their colors also harmonize closely with the shadows of the foliage. The whole evidently forms a composite protective device, which must be, as a rule, effectual. Scarcely any attention is ever paid by the bush-tits to large hawks, such as buteos, or to other large birds such as turkey vultures, pigeons, or jays. The bush-tits seem to be able to easily identify their real enemies at surprisingly long range.

It is also of interest to note that mammals, large or small, are seldom stigmatized by the confusion-chorus. If a person, or dog, or similar animal appears among a flock of bush-tits, a bird here and there may utter a sharp repetition of the simple location-note very much augmented in volume. But after a moment's quiet, during which the birds intently survey the cause of the alarm, the flock goes on with its busy foraging, and usual miscellany of location-notes. Very often no attention at all is paid to a person, the birds flitting about heedlessly within a few feet of him.

During the short breeding season from March through May, when the flocks are disbanded and the birds are in pairs, the same notes are used between the mates. These express about the same meaning as during the rest of the year, but of course, often have to do with the nest and young. But there is no vestige of a distinctive spring-song, as I have seen ascribed to the bush-tit.

To summarize: I have attempted to describe more minutely the bush-tit's notes as they sound to me. Of course I realize how hard it is to describe bird-voices. And also, as I have often had opportunity to note, hardly any two persons receive the same impression of a single bird's song. No two people seem to hear exactly alike.

Each of the five notes defined beyond is perfectly distinct, and each at once signifies to me some particular and easily recognizable state of mind of the birds in question.

1. Faint one-syllabled simple notes, usually uttered in irregular succession while the birds are undisturbed, and intently gathering food or nest material. (*Tsit, tsit; tsit; tsit.*)

2. From one to five of the simple notes uttered somewhat more loudly and followed by a rather shrill quavering note of longer duration. This is uttered among members of a flock or between a pair of birds when not intently feeding, but when moving more or less rapidly with restless activity from tree to tree in some definite direction. (*Tsit, tsit, tsit, sre-e-e-e; tsit, sre-e-e-e.*)

3. The same as the last, that is, the one to five simple notes followed by a quavering trill, but pronounced with much more volume and emphasis, and, according to circumstances, more hurriedly. This is uttered by lone individuals suddenly finding themselves separated from one another or from the main flock. (*Tsit', Tsit', sre-e-e-e'.*)

4. Of the same quality as the simple one-syllabled note first described, but greatly intensified, and pronounced abruptly, several in rapid succession. This is uttered by parent birds when a nest is disturbed, and by a few certain individuals in a flock, upon the first appearance of any enemy. In the case of mammals, such as a cat, hog, or squirrel, or a person, this simple alarm-note is not followed by the confusion chorus to be next described. (*Tsit'; tsit', tsit'; tsit''.*)

5. A shrill quavering trill, of the same quality as described under No. 2 above, but without the preceding simple notes, and chanted continuously in a monotone by all members of a flock for as long as two minutes. This peculiar chorus is uttered only during the presence of such an avian enemy as the sharp-shinned, Cooper, sparrow, or pigeon hawk, and owls, if these latter happen to be startled into a day-time flight, as occasionally happens. (*Sre-e-e-e-e-e, etc.*)

### The White-necked Raven

BY VERNON BAILEY

**M**Y first acquaintance with the white-necked raven began late in November of 1889 at Wilcox, Arizona, where a flock of about fifty of the birds were feeding around the stock yards and cawing hoarsely from tops of telegraph poles with apparently no notion of migrating to warmer latitudes. At El